

## **Amendments to the Claims:**

This following listing of claims will replace all prior versions, and listings, of claims in the application.

## **Listing of Claims:**

Claim 1 (currently amended): A chemical mechanical planarization polishing apparatus comprising:

a polishing pad, the polishing pad being arranged to rotate during wafer polishing;

a wafer holder, the wafer holder being arranged to support a wafer to be polished using the polishing pad, wherein the polishing pad is arranged to move relative to the wafer holder such that an area of contact between the wafer holder and the polishing pad varies; and

a force control system, the force control system including a controller and a plurality of actuators arranged to apply forces to the polishing pad, the controller being arranged to control the forces as the area of contact varies to substantially maintain a first polishing pressure on the wafer arranged to be supported by the wafer holder.

Claim 2 (original): The chemical mechanical planarization polishing apparatus of claim 1 wherein the controller is arranged to vary the forces as the area of contact varies to substantially maintain the first polishing pressure on the wafer arranged to be supported by the wafer holder.

Claim 3 (currently amended): The chemical mechanical planarization apparatus of claim 1 wherein the plurality of actuators are electromagnetic electromechanical actuators, and controlling the forces applied by the plurality of actuators includes controlling currents provided to the actuators.

Claim 4 (original): The chemical mechanical planarization apparatus of claim 1 wherein the controller is further arranged to determine the forces, the forces being determined based upon a position associated with the polishing pad, the first polishing pressure, an air pressure load on the polishing pad, and a distance between a center of the polishing pad and a center of gravity associated with the chemical mechanical planarization apparatus.

Claim 5 (original): The chemical mechanical planarization apparatus of claim 4 wherein the area of contact varies with the position associated with the polishing pad.

Claim 6 (original): The chemical mechanical planarization apparatus of claim 4 wherein the position associated with the polishing pad is a distance between the center of the polishing pad and a center of the wafer arranged to be supported on the wafer holder.

Claim 7 (original): The chemical mechanical planarization apparatus of claim 1 wherein the plurality of actuators includes a first actuator, a second actuator, and a third actuator, the second actuator and the third actuator being arranged to each apply a first force to the polishing pad while the first actuator is arranged to apply a second force to the polishing pad.

Claim 8 (original): The chemical mechanical planarization apparatus of claim 1 wherein the first polishing pressure is a substantially uniform polishing contact pressure.

Claim 9 (original): A wafer planarized using the chemical mechanical planarization apparatus of claim 1.

Claims 10-21 (canceled)

Claim 22 (new): A chemical mechanical planarization polishing apparatus comprising:

a polishing pad;  
a wafer holder, the wafer holder being arranged to support a wafer to be polished using the polishing pad, wherein the polishing pad is arranged to rotate to polish the wafer and to move relative to the wafer holder such that an area of contact between the wafer holder and the polishing pad varies; and

a force control system, the force control system including a controller and a plurality of actuators arranged to apply forces to the polishing pad, the controller being arranged to control

the forces as the area of contact varies to substantially maintain a first polishing pressure on the wafer arranged to be supported by the wafer holder.

Claim 23 (new): The chemical mechanical planarization polishing apparatus of claim 22 wherein the controller is arranged to vary the forces as the area of contact varies to substantially maintain the first polishing pressure on the wafer arranged to be supported by the wafer holder.

Claim 24 (new): The chemical mechanical planarization apparatus of claim 22 wherein the plurality of actuators are electromagnetic actuators, and controlling the forces applied by the plurality of actuators includes controlling currents provided to the actuators.

Claim 25 (new): The chemical mechanical planarization apparatus of claim 22 wherein the controller is further arranged to determine the forces, the forces being determined based upon a position associated with the polishing pad, the first polishing pressure, an air pressure load on the polishing pad, and a distance between a center of the polishing pad and a center of gravity associated with the chemical mechanical planarization apparatus.

Claim 26 (new): The chemical mechanical planarization apparatus of claim 25 wherein the area of contact varies with the position associated with the polishing pad.

Claim 27 (new): The chemical mechanical planarization apparatus of claim 25 wherein the position associated with the polishing pad is a distance between the center of the polishing pad and a center of the wafer arranged to be supported on the wafer holder.

Claim 28 (new): The chemical mechanical planarization apparatus of claim 22 wherein the plurality of actuators includes a first actuator, a second actuator, and a third actuator, the second actuator and the third actuator being arranged to each apply a first force to the polishing pad while the first actuator is arranged to apply a second force to the polishing pad.

Claim 29 (new): The chemical mechanical planarization apparatus of claim 22 wherein the first polishing pressure is a substantially uniform polishing contact pressure.

Claim 30 (new): A wafer planarized using the chemical mechanical planarization apparatus of claim 22.